[HEXAGONAL GATE STRUCTURE FOR RADIATION RESISTANT FLASH MEMORY CELL]

Abstract of Disclosure

A radiation resistant hexagonal gate flash memory cell. The flash memory cell includes a substrate, a source region, a drain region and a gate structure. A channel region is also formed in the substrate between the source region and the drain region. The gate structure is located above the substrate between the source region and the drain region. The gate structure further includes an oxide-nitride-oxide composite layer over the substrate. In a direction perpendicular to the channel, width of the gate structure increases gradually from the source region towards a pre-determined location and decreases towards the drain region thereafter. When the flash memory cell is subjected to radiation illumination, electron-hole pairs thus generated will be injected into the substrate without passing into the nitride layer. In a programming operation, a portion of the gate structure close to the source region serves as an equivalent source region having an area greater than the drain region so that second bit effect is greatly reduced.

Figures